Advisory on Last Mile Connectivity for Water Supply

Ministry of Housing and Urban Affairs
Government of India

CWAS CENTER FOR WATER AND SANITATION
CRDF CEPT UNIVERSITY

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Prepared by:

Center for Water and Sanitation

CRDF, CEPT University

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Foreword

AMRUT 2.0 is launched with an aim to make cities "Water Secure", and with a focus on universal access to functional water tap connections. In this journey, it is evident that establishing Last Mile Connectivity of water connections is an indispensable step towards realizing our goals.

This advisory provides several approaches to improve the ‘last mile connectivity’ for water supply and achieve universal coverage of functional water supply connections. It will guide the Urban Local Bodies/ Parastatals/ State Governments to achieve universal coverage of water connections. It covers the three core areas: improving water network coverage and providing access to all plots, alleviating legal and administrative barriers, and making the water connection charges and tariff affordable.

I firmly believe that this advisory will encourage and empower the Urban Local Bodies, State Authorities and concerned stakeholders to suitably adopt the approaches and take significant strides towards the goals.

I take this opportunity to acknowledge the efforts of Center for Water and Sanitation (CWAS) at CRDF, CEPT University for preparing this advisory.

D. Thara (I.A.S)

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Ministry of Housing and Urban Affairs,
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New Delhi.

Preface

AMRUT mission envisages providing water tap connections in all statutory towns through 2.68 crore new household tap connections. It aims to develop water secure cities in the spirit of 'AatmaNirbhar Bharat'. Last Mile Connectivity is to ensure access to safe water to all households of the city including slums and vulnerable communities through individual tap connections. Despite significant progress in expanding water infrastructure, we need to continue to work towards achieving the ultimate goal of universal coverage of water connections.

This advisory has been developed to provide guidance to ULBs to identify measures to achieve universal coverage of functional tap water connections. The use of this Advisory can be made by both the ULBs and state governments to develop appropriate plans and policies for ensuring last mile connectivity.

In this context, certain key areas have been identified as critical for improving the provision of individual tap water connections. It focuses on the actions of providing water network coverage, alleviating legal and administrative barriers and reducing water connection charges and tariffs. This advisory emphasizes that we must ensure water connections to urban poor households. The advisory provides case examples from various cities across different states that have successfully overcome the challenges associated with providing Last Mile Connectivity.

We extend our gratitude to all those who have contributed to the research and development of this advisory.

Dr. Dinesh Mehta and Dr. Meera Mehta and CWAS team

CWAS, CRDF, CEPT University

List of Abbreviations

AI	Artificial Intelligence
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AMC	Ahmedabad Municipal Corporation
BWSSB	Bangalore Water Supply and Sewerage Board
CBO	Community Based Organizations
CMRC	Community Managed Resource Centers
DPR	Detailed Project Report
DMA	Directorate of Municipal Administration
GIS	Geographic Information System
GoG	Government of Gujarat
GoM	Government of Maharashtra
HUDCO	Housing and Urban Development Corporation Ltd.
IoT	Internet of Things
JMC	Jamnagar Municipal Corporation
MLD	Million Litres per Day
MAVIM	Mahila Arthik Vikas Mahamandal
MoHUA	Ministry of Housing and Urban Affairs
NGO	Non-Governmental Organizations
NOC	No Objection Certificate
NRW	Non-Revenue Water
NSDP	National Slum Development Program
OTS	One Time Settlement
PMC	Parbhani Municipal Corporation
SHG	Self Help Group
SJMMSVY	Swarnim Jayanti Mukhya Mantri Shehri Vikas Yojana
SMKMC	Sangli-Miraj-Kupwad Municipal Corporation
SNP	Slum Networking Program
ULB	Urban Local Body
VDS	Voluntary Disclosure Scheme

Executive Summary

To achieve AMRUT 2.0 goal of "water secure cities", the Last Mile Connectivity of water supply connections is an essential step. Various studies suggest that household level tap connections in urban areas, particularly in slum areas, need greater attention. In recent years, the government has made numerous efforts to increase access to safe and adequate drinking water for all. The focus of this Advisory is to provide guidance to ULBs to take actions to move towards the goal of universal water coverage.

The actions suggested in this advisory are in three key areas: a) improving spatial coverage of infrastructure and access to household water connections, b) simplifying administrative procedures for taking new water connections, and c) making water connection costs and water charges affordable for low-income households. These are based on case examples where such actions have been taken across different cities in India.

1. Improving spatial coverage and providing access to all

This section focuses on the actions needed to increase the water network coverage across the city and to ensure access to household water connections especially for the poor. It is emphasised that water network should be extended to house level plot boundaries in low-income settlements. This will reduce the cost of getting connections for them. It discusses and suggests measures to address the issue of illegal connections.

Key actions		Case examples
1.1 Extending network coverage and providing household water connections	• Extend water supply network to individual plots to help reduce connection costs	Case 1: **Parbhani Municipal Corporation:** Increasing 25,000 water connections through infrastructure augmentation Case 2: **Government of Maharashtra:** Converting group connections to individual connections
1.2 Include water supply network in slums and low-income areas in Detailed Project Report (DPR)	• Incorporate network details and costs to individual plots/ houses in low-income areas in DPRs • Extension of city level water supply network to slum	Case 3: **Ahmedabad Municipal Corporation**: Provided network to plots in the proposals and DPRs of its slum networking projects. Extension of internal slum settlement level water supply network using zonal/ ward level budgets.

Key actions		Case examples
	settlements using municipal budgets	
1.3 Identify and regularize unauthorized connections	• Conduct periodic surveys and drives to identify and formalise unauthorized connections • Lower connection costs • Raise awareness through public campaigns	Case 4: **Government of Gujarat, Jamnagar Municipal Corporation:** Under the Nal se Jal urban scheme introduced a 'Three slip system' to regularize illegal water connections Case 5: **Government of Punjab:** Regularization drives for domestic unauthorized water connections Case 6: Practices across various municipalities to reduce illegal water connections

2. Alleviating legal and administrative barriers

The water connection process in many ULBs is lengthy and tedious. It often requires large number of documents to be submitted along with application. It is necessary to make the process less cumbersome and simple by requiring only a minimum number of documents. It would also help to remove any administrative or legal barriers that may hinder the households to get water connections easily.

Key Actions		Case examples
2.1 Reducing required documents and easing the application process	• Reduce the number of documents required for new connections and implement single-window systems • Provide both online and offline platform for applying and processing the water connection application	Case 7: **Bengaluru Municipal Corporation:** Developed an online portal 'Jaladhare' to apply for new water connections
2.2 Delinking provision of water connection from land tenure	• Delink land tenure from provision of water supply connections	Case 8: **Ahmedabad Municipal Corporation:** Delinked tenure for granting access to basic services in the city – through the 500 NOC scheme
2.3 Introduce centralized database systems	• Set up a centralised database for details of basic services for all properties, including for slum households	Case 9: **Government of Andhra Pradesh:** Municipalities are leveraging innovative technologies to deliver important services to citizens

3. Affordable connection charges and water tariff

Meeting the costs of water connection charges can pose a significant challenge to urban poor households. While ULBs are advised to keep the connection charges below Rs. 3,000 (as per AMRUT 2.0 guidelines), many ULBs charge more in the guise of road cutting charge, plumber fee, extra pipe cost etc. It is important to address this aspect which affects the slum and vulnerable households the most.

Key Actions		Case Examples
3.1 Approaches to reduce connection charges	• Alleviate burden of paying the full connection charges at one time, by including them in the water tax or bills over time • Exclude additional costs of road cutting and plumbing charges from the connection fee • Reduce charges for slum households and urban poor • Explore credit for water connections • Generate awareness and adopt participatory process/outreach to the poor	Case 10: **Government of Odisha:** 'Drink from Tap mission' Case 11: **Case of Jharkhand:** Relaxing water connection charges for urban poor at the State level Case 12: **Sangli-Miraj-Kupwad and Chandrapur:** Reduced water connection charges for the urban poor Case 13: **Chandrapur Municipal Corporation:** Collecting water connection charges indirectly Case 14: **Government of Gujarat:** Connections charges across all cities were kept at an 'affordable' Rs. 500 under the Swarnim Jayanti Mukhya Mantri Shehri Vikas Yojana Case 15: **Government of Andhra Pradesh** released funds under a Slum Development Project to provide a 50 percent subsidy towards the water connection costs Case 16: **Jalna Municipal Council:** **S**anitation credit was mobilized through urban SHGs with the support of MAVIM Case 17: **Puri Municipal Corporation:** Involves SHGs to increase coverage of individual water connections

1. Introduction

With increasing urbanization, provision of drinking water and sanitation services to all urban residents has become a major challenge. The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) was launched in 2015 with a primary focus on enhancing the basic infrastructure of the 500 selected cities and towns. 9.7 million water tap connections and 6.2 million sewer connections were provided under AMRUT and in convergence with other schemes. However, the mission did not cover smaller towns. The new mission AMRUT 2.0, launched in 2021 aims to make cities "water secure' and "self-sustainable" through circular economy of water. It aims to provide 100% coverage of water supply to all households of all 4000+ statutory towns of India.

Fulfilment of the goals would require universal coverage of water connection. In this context, 'Last Mile Connectivity' of water supply that ensures access to safe water to all households, including slums and vulnerable communities, through individual tap water connections becomes important.

1.1 Importance and Actions Needed for Last Mile Connectivity

AMRUT 2.0 focuses on moving towards universal access to household water connection. Many cities have successfully expanded their water supply infrastructure and have reached most parts of their cities. In some cities, however, households in slum settlements do not always have access to municipal water supply. These household depend on alternate sources of water that maybe unsafe and its use can cause health problems. Universal coverage of water supply connections can help provide safe drinking water to all and reduce water related health hazards.

AMRUT 2.0 has a reform agenda to enhance city water security, financial health and ease of living of citizens. One of its reforms on governance mentions 'ULBs to ease getting water and sewer connections'. This advisory suggests key actions which the urban local bodies (ULBs) can adopt to achieve universal access to individual water connections. The advisory is developed to facilitate local governments to address key bottlenecks in ensuring last mile connectivity. It identifies key actions for ULBs to take up for addressing barriers in providing universal access.

The actions are divided into three key areas: a) improving spatial coverage and access to household water connections, b) simplifying administrative procedures for taking new connections, and c) making connection costs affordable for low-income households. These are based on case examples where such actions have been taken across different cities in India.

Photo credit- Arun Kumar Das, Swarajya, 2021. Accessed from: https://shorturl.at/cjGNV

2. Improving spatial coverage and providing access to all

Spatial coverage of water supply network is the extent of piped water supply network laid in the habitable areas of the city. With support from recent programmes such as AMRUT 1.0 and AMRURT 2.0, many cities have successfully laid pipe network in most parts of the city. However, in some cities, more efforts are needed to translate this infrastructure coverage to household level consumer water connections.

This section highlights the actions that can be taken up by local government to increase network coverage and to ensure access to household water connections especially for the poor and vulnerable households. It also emphasises the importance of extending water networks to plot boundaries in low-income settlements, for alleviating the burden of additional charges imposed on applicants for getting connections. It also discusses the challenge of illegal connections and suggests approaches to bring them into legal compliance.

2.1 Extending geographical network coverage and individual water connections

As part of the AMRUT 1.0 and AMRUT 2.0 programs, many cities have successfully implemented water supply projects. This has helped to make significant progress in enhancing the geographical coverage of water supply infrastructure. To ensure benefit of this with universal access to household level water supply connections, ULBs will need to undertake key measures as suggested below:

- **Extending water supply network to all the 'plots'**. ULBs need to determine the physical extent of the network across different zones of their cities. This needs to be done by mapping the water supply network. ULBs will also need to identify water connections given from its network across the city.

- The ULBs need to also compute number of connections and the number of households served with water tap connections across different zones. This assessment is of particular importance for slum areas, where many households depend on group connections, shared connections or standposts.
- Identify and prepare a plan to meet all significant gaps in the water supply network. This should include areas where water network is available but no water connections are given. The reasons for this must be carefully evaluated, and various approaches to provide individual water connections need to be explored.

Case 1: Shifting to daily water supply in Parbhani Municipal Corporation and increasing 25,000 connections through infrastructure augmentation

Parbhani Municipal Corporation (PMC) has improved its water supply services from 15-18 days intermittent water supply to daily water supply. Initially PMC used to get water from Rahati River source and citizens used to get water supply once in 15-18 days. Under the AMRUT scheme, source augmentation by 82 MLD (according to projected population of year 2049) and network expansion were sanctioned by the Government of Maharashtra and were implemented for increased water supply in Parbhani.

With augmentation of the water source and water supply infrastructure under AMRUT, ULB is now able to supply 52 MLD water. The augmentation of water supply has eliminated the need for private water tanker operators. The extension in network and augmentation of water source also made it possible to add 25,000 additional water connections. Thus, when PMC extended their drainage and water supply network, all households in slum areas also got individual water supply and drainage connection. Each new connection has a water meter installed, as PMC has planned to charge volumetric water tax in future, though currently flat rate water tax is applicable.

Case 2: Converting group connections to individual connections in Maharashtra

The slums in Maharashtra have been provided with various policies and programs for improving their basic services. In the late 1990's, the Directorate of Municipal Administration (DMA) states to provide group connection in slums, EWS communities and chawls (As per Gazette No. GNT 1096/Project No. 182/96/4 dated 04.04.1997). The group connections turned to individual connections with the Maharashtra Suvarna Mahotsavi Nagari Dalit Vasti Pani Purwatha va Swachchhata Yojana (Maharashtra Golden Jubilee Urban Dalit Vasti Water Supply and Sanitation Scheme). It mentioned to provide individual water connections and individual toilet facilities to urban Scheduled Caste and Neo Buddhist communities in the state in 2010 (Government Resolution No. Na-Da-Va- 2010/Project No. 219/Pa-Pu-22 dated 25.06.2010). For Urban Water Supply, it stated to provide individual water connections to all authorized households, conversion of stand posts into group connections. In case of non-notified slums, Public Water Booth should be constructed for water supply.

Sant Gadgebaba Urban Sanitation Campaign by the GoM's water supply and sanitation department also focused on water supply and sanitation in slums. It also acts as a monitoring body to record the initiative taken by the ULBs on construction of individual and public toilets and their maintenance in slums.

Source: Directorate of Municipal Administration (DMA) (1997) Gazette No. GNT 1096/Project No. 182/96/4 dated 04.04.1997. Govt of Maharashtra; Government of Maharashtra (2010) Government Resolution No. Na-Da-Va- 2010/Project No. 219/Pa-Pu-22 dated 25.06.2010. Govt. of Maharashtra

2.2 Include extension of water supply network in slums and low-income areas in DPRs for water supply related infrastructure development

The Detailed Project Reports (DPRs) prepared for water supply network projects generally do not consider provision of internal pipeline network connecting household premises. This approach results in applicants having to bear the expenses associated with installing the internal pipe, road cutting, plumbing, and other related costs. This increases the overall connection charges which a household needs to pay, particularly becoming a constraint in slums and low-income settlements. Thus, it would be important to provide internal water supply pipe network in slums and other low-income areas.

It is important to include cost of water supply network to individual plots/houses in slums and low-income areas in the DPRs for city level water supply infrastructure projects. The

ULBs need to make an effort to include the cost of internal pipe network in all slums and low-income areas in the proposed project budget in the DPRs. This will reduce the cost of getting water connections for households in these areas and help remove a significant barrier for the urban poor in accessing household level tap water connections.

Case 3: Slum Networking Project (SNP) by the Ahmedabad Municipal Corporation

SNP in Ahmedabad was designed to provide a package of infrastructure services in consultation with communities/ CBOs, NGOs and the private sector. From its inception, SNP was designed to ensure that NGO partners directly provided or enabled access of communities to health and education services. The financial arrangements evolved for safeguarding financial contributions of individual households through deposits in individual accounts till such time that transfers have to be made to AMC. This also helped to significantly reduce the perceived risks by communities. AMC's partnerships with NGOs for implementation of SNP has resulted in NGOs doing the planning, designing and implementing infrastructure provision in slums. AMC's role has evolved further to reviewing the design, supervision of implementation and overall monitoring the progress of work.

SNP has been undertaken in many slum communities in Ahmedabad covering over 10,000 households. This change in implementation process over the years shows AMC's conviction in the partnering approach and need for slum residents to demonstrate willingness to get individual connections for water supply and sanitation services. AMC has made adequate provision in its annual budgets for SNP and has also availed funds under Government of India's National Slum Development Program (NSDP), and financial support of HUDCO.

SNP program of Ahmedabad city is an example of strong and substantial partnership among various stakeholders of the civil society in providing better physical quality of life to its poor fellow citizens. It is also an excellent example of how, when a government body is willing to enter into strong and meaningful partnerships, many elements of good governance such as equity, transparency and accountability can be tackled.

Now, the SNP process has been internalised by AMC for use of zonal / ward level budgets for provision of Internal water supply and sewerage networks in slums and chawls of Ahmedabad.

Source: https://www.pas.org.in/Portal/document/ResourcesFiles/GoodPracticeDocs/Slum%20Networking%20Project.pdf

In addition, local government should consider providing internal slum settlement level water supply network by extension of existing city level water supply network. For this, the local government may utilize the zonal or ward budgets or municipal councillors' budgets.

2.3 Identify and regularise unauthorised connections

Unauthorised water connections pose a significant challenge to manage urban water supply in India. They are one of the factors influencing revenue of ULBs. Additionally, they disrupt the pressure systems designed for the water network. The reasons behind prevalence of unauthorised connections are often related to affordability issues and cumbersome legal procedures, or simply the lack of internal water supply network in slums and low-income areas. Thus, identifying the unauthorised connections and regularizing them is essential to improve both equity and efficiency in water delivery.

One of the effective approaches for identifying unauthorised connections is to conduct periodic surveys and drives to identify and formalise such connections. Local governments can set up a dedicated Non-Revenue Water (NRW) cell, responsible for identifying unauthorised connections and implementing appropriate measures. Special units and teams must be formed for such activities. The surveys can be carried out by linking the water connection database and property tax database or electricity records. Based on the gaps in the data of water connection and property tax/electricity connection, locations can be identified for detailed survey. Nagpur Municipal Corporation formed special squads for 10 days drive in 2018 for regularizing or disconnecting illegal connections in the city.

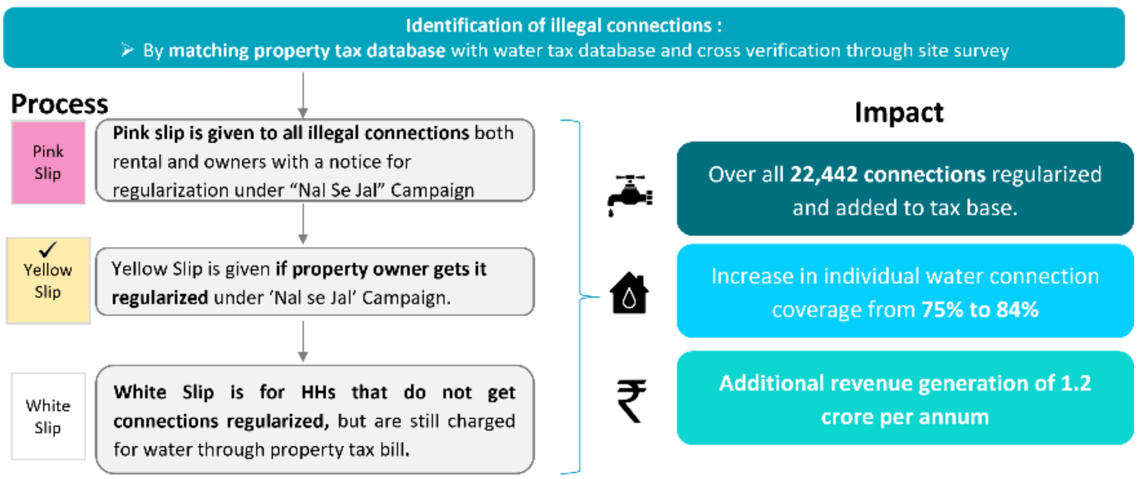
Case 4: Gujarat regularizes drinking water connections using the Nal Se Jal urban scheme

The Gujarat Government issued a resolution in 2020 to regularize illegal connections across all the 170 municipal bodies. It was a part of its Nal se Jal scheme. Under this, the Government of Gujarat decided to provide water connections at a fee of only Rs. 500, especially in slums and for vulnerable households. Under this scheme, many illegal water connections were regularized across various ULBs of Gujarat, a case of Jamnagar Municipal Corporation is as below:

Jamnagar Municipal Corporation (JMC) introduced a three-slip system to regularize illegal water connections

This practice was initiated by the JMC when Gujarat government's 'Nal Se Jal' scheme was in action. JMC identified illegal connections by matching property tax database with water tax database and cross verifying through site surveys. They issued pink slip to all identified illegal connection holders. Both rental and owners were notified with a notice to regularise under 'Nal Se Jal' campaign where the illegal connections could be regularized at Rs 500. A 'Yellow slip' was given to those who got their connection regularized under the campaign. A white slip was given to those households who did not get their connections regularized. For these properties, water tax bill as a part of property tax was directly sent to those properties by matching slip records.

The impact of this practice by the JMC helped the ULB to regularize 22,442 connections and these were also added to the tax base. It also helped in increasing individual water connection coverage from 75% to 86%. An additional revenue of 1.2 crore per annum was also generated.



Source: Gujarat Urban Development Mission. Swarnim Jayanti Mukhya Mantri Shehri Vikas Yojana. Govt of Gujarat. Available at: https://gudm.gujarat.gov.in/sjmmsvy-state-funded.htm; The Indian Express (2020) Gujarat Govt to regularize illegal drinking water connections in urban areas- https://indianexpress.com/article/india/gujarat-govt-to-regularise-illegal-drinking-water-connections-in-urban-areas-6565949/

Reducing the connection cost can also incentivise the urban poor to formalise their connections. This can be achieved through measures such as reducing the cost of connection for urban poor residents or introducing minimum charges for connection aimed at encouraging regularization. The connection charges can be based on the size of the property which will help in making the charges equitable. It is crucial to design such schemes at either state or city level.

Case 5: Regularization drives for domestic unauthorized water connections by Punjab

The Punjab cabinet in 2021 approved a One-time Settlement (OTS) scheme for regularisation of unauthorized connections and recovery of arrears on account of water supply and sewerage charges. Under the domestic category, the scheme was valid for three months and expected to regularize 93,000 connections. The one-time fee for regularization varied in three categories according to plot size:

- Rs 200 per connection (Rs 100 each for water supply and sewerage) for plot measuring upto 125 sq. yards,
- Rs 500 for plot size between 125 to 250 sq. yards, and
- Rs 1000 per connection for plots measuring over 250 sq. yards.

The scheme provided that no penalty would be charged if the fee is deposited within three months from the date of notification. If the residents do not regularize in the given time frame, then 100 percent penalty would be charged on the fee for regularization. Users who failed to get their connections regularized within six months also faced disconnection. No other charges such as road cutting, connection fee and security were charged beyond the deposit fee under the scheme. Upon satisfaction of technical officials of the ULBs regarding quality of pipe, size of connection and alignment of water supply line, the connections were to be regularized. Under this, in Ludhiana over 50,000 unauthorized connections were regularized.

Source: https://www.tribuneindia.com/news/punjab/one-time-chance-to-regularise-water-sewerage-connections-in-punjab-298144; Photo credit: Punjab Water Supply and Sewerage Board website. https://pwssb.punjab.gov.in/

Raising awareness through public campaigns. Managing illegal water connections requires a multi-pronged approach. Many ULBs have conducted drives for identifying unauthorised connections, by offering ‘amnesty’ such as no penalties and reduced connection costs. Public campaigns through print and social media can help in this process.

Case 6: Practices across various municipalities to reduce illegal water connections

	City / State	Actions/Initiative	Outcomes
1	**Hyderabad (Telangana)**	• Implemented **Voluntary Disclosure Scheme (VDS)** for a period of 90 days in 2019-20. • Consumer can regularize online by paying normal connection charges along with one month demand as penalty- moratorium. • Failed to do so the consumer have to pay Two times connection charges, plus three years of consumption charges in addition to service charges of Rs.300/-, failing which criminal charges to be pressed against the delinquent.	• Achieve 11,000 requisitions and Water board fetched 1.5 Cr revenue during the scheme.
Source: The Times of India, (2020) Water's boards voluntary scheme. Available at: https://m.timesofindia.com/city/hyderabad/water-boards-voluntary-scheme-fails-to-deter-illegal-water-connections/amp_articleshow/74274635.cms?ps=5&utm_campaign=AMP_InfiniteScroll&utm_medium=articleshow&utm_source=organic& HMWSSB, (2019) HMWSSB launched VDS 2019. Available at: https://www.hyderabadwater.gov.in/en/index.php/news_view?newsid=5579			
2	**Mysuru (Karnataka)**	• Regularization **drive to pay deposit amount on an instalment basis.** • Deposit amount of 3,115 for regularising in which consumer to pay Rs 1,115 in initial phase and rest amount can be pay in instalments of Rs 100 for 20 months	• Aims to regularize 13,000 illegal connections. • Planned to collect 15 Cr from deposit amount to install water meters.
Source: The Times of India, (2023) Citizens can regularise illegal water meters by paying deposit amount. Available at: https://timesofindia.indiatimes.com/city/mysuru/citizens-can-regularise-illegal-water-meters-by-paying-deposit-amount/articleshow/101057524.cms?from=mdr			
3	**Bangalore (Karnataka)**	• The Board conducts **regular drives to monitor illegal connections.** • A fine amount of 10,000 or six times the water bill is levied on the household who bypass connection, which reflect in their water bills.	• Apart from by-pass connections, the board have identified 57,000 unauthorized connections. • Unaccounted for water has been cut from 49 percent to 36 percent.
Source: Ramesh S. Deccan Herald, (2021) BWSSB survey detects nearly 4,000 illegal water connections. Available at: https://www.deccanherald.com/india/karnataka/bengaluru/bwssb-survey-detects-nearly-4000-illegal-water-connections-1028185.html The New India Express, (2021) BWSSB to levy 10k fine for illegal connections. Available at: https://www.newindianexpress.com/cities/bengaluru/2021/aug/04/bwssb-to-levy-rs-10k-fine-for-illegal-connections-2339847.html			
4	**Nashik (Maharashtra)**	• Civic body launched an **amnesty scheme for regularising illegal water connections.** • Residents to regularise connections by 1st June 2023, otherwise have to pay hefty penalty. • Residents to pay regular connection charges, deposit amount and penalty amount (depending on size of connection) during scheme period.	• Aims to regularise more than 50,000 water connections. • Penalty amount for residents will be between Rs 1,800 – Rs 38,400
Source: The Times of India,(2023) Amnesty scheme starts to regularize water connections. Available at: https://timesofindia.indiatimes.com/city/nashik/amnesty-scheme-starts-to-regularize-water-connections/articleshow/99898745.cms?from=mdr			

3. Alleviating legal and administrative barriers

The process to obtain water connection typically requires several documents along with the application. The ULB verifies the documents, and the applicant is asked to pay connection fee. After the payment of connection fees, a work order is given to a licenced plumber to provide a water connection. While this may appear simple, for the urban poor households, the required documentation for application can become a major barrier.

In addition to requiring many documents, the main issue is often linked to State and local policies that prevent the provision of water connections to residents who do not have 'legal tenure'. Thus, this section highlights some of the practices such as easing application process, delinking service provision from land tenure and need of a centralised database for which can be helpful for the ULBs to ease the process of water connection.

3.1 Reducing required documents and easing the application process

One of the major hinderances in the application procedure for water connection is a large number of documents required for submission along with the application form by some ULBs. The number and types of supporting documents vary among different cities, with some demanding up to 8 documents, while others require only 1 or 2 documents. The supporting documents required with application generally include property tax receipts, NOC certificates (from council, owner, society chairman as applicable), income certificates, plot area maps, and other personal details of the applicant.

The ULBs can streamline the process by reducing the number of documents needed and implementing a single-window systems. To expedite the water connection application process, it is essential to simplify the procedures and document submission requirements. In a single window system, applicants do not have to visit multiple departments within the council to submit documents for a water connection application. Many cities have simplified the requirements of documents where the applicants are required to produce only a property tax receipt, identity documents and address proof as supporting documents. For example, Parbhani, Chandrapur and Sangli-Miraj-Kupwad Municipal Councils in Maharashtra and Jamnagar from Gujarat have adopted this approach.

General list of supporting documents required across cities of India
(Document requirement varies across cities)

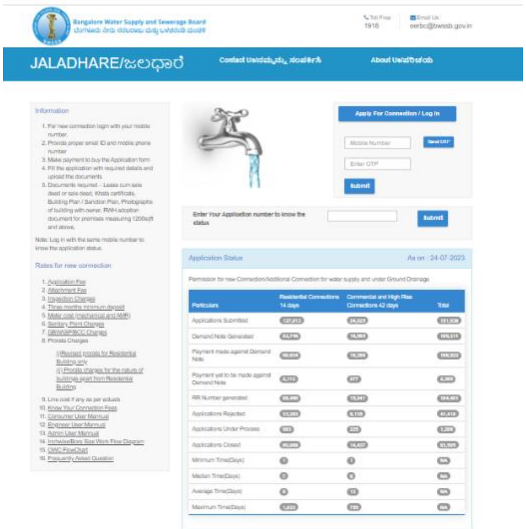
- Property tax receipt
- Address proof
- Identity proof
- 7/12, Property card/Purchase deed
- Building permission
- Certified letter of construction permission
- User licence
- Stamp paper guarantee/ Rs. 100 bond of applicant
- Income map
- No Objection Certificate (NOC) (By Owner/Society/Council)
- Applicant passport-size photo
- Road dismantle permission
- Copy of house tax assessment sheet registered as tenant in case of tenancy
- Drainage connection receipt
- Copy of layout plan

Source: List based on assessing various cities requirement of supporting documents for getting water connections

Cities need to provide both online and offline platforms for applying and processing water connection applications. In most ULBs, households seeking new water connections need to submit a physical paper-based application. Generally, the application forms are available at the Municipal Corporation or Council office. However, often in large cities such forms are available at zonal level, making it difficult for applicants to find the appropriate departments. However, for many ULBs application forms can be downloaded from the ULB website, making it easy for potential applicants. It is important that all ULBs should ensure that both offline and online platforms are available to applicants. For this, online platforms need to be developed with easy and user-friendly interface. It must be ensured that both the online and offline platforms are operational as well as the municipal staff is well versed with both the systems.

Case 7: Bengaluru has developed an online portal 'Jaladhare' to apply for new water connections

A single window platform is developed by Bangalore Water Supply and Sewerage Board (BWSSB) that provides the consumer to log in/register for new water connection, apply, get verified by officials, track the status, make payments and check the finished status. It provides the consumers all necessary details for applying for a new connection including: rates of charges according to dwelling unit type, documents required, charges, as well as a complete step wise user manual for any new applicant. It also provides a transparent window to check the status of the application at every stage throughout the process. Thus, Bangalore Municipal Corporation provides a good example on application process that can followed by other ULBs. [Click here to visit site.]



Similar state level online portals are also available for ULBs in Kerala, Andhra Pradesh and Karnataka to apply for new water connections.

Source: Bangalore Water Supply and Sewerage Board. Jaladhare. Available at: https://owc.bwssb.gov.in/consumer/

3.2 Delinking provision of water connection from land tenure

Land ownership and tenure issues often create a barrier to provision of water services to the urban poor. **ULBs can delink land tenure from provision of water supply connections**. One approach followed by some ULBs is to use alternative documents as 'proof of residence', such as ration cards, identity cards, election cards, electricity bills. To move towards universal coverage of water connections, all applicants need to be given water connection irrespective of tenure such as unauthorized colonies or non-notified slums. The tenure issues will need to be de-linked from water service provision.

Case 8: Ahmedabad Municipal Corporation (AMC) delinked tenure for granting access to basic services in the city - 500 NOC scheme

AMC initiated various schemes to provide basic services of water, sanitation and electricity for the urban poor. It removed the requirement of a tenure document for access to services. This was done under its NOC-500 programme, that was introduced in 2002. AMC provided slum households with a 'No Objection Certificate' (NOC) based on which they could access water services for a fee of Rs. 500. In order to be eligible, the applicant should be residing in a slum. in a unit of not more than 40 sq. m and should have a residence proof. Nongovernmental organizations working with the Ahmedabad Corporation have helped the communities to obtain these certificates.

This pragmatic solution helped to overcome the constraints faced in other cities that preclude the provision of services to slum settlements. This scheme provided access to water and sanitation to over 10,500 slum households. It has been a biggest step towards slum community's integration into the city.

AMC used the provision made in Gujarat Provincial Municipal Corporations Act, 1949 which mentions to implement these practices. It mentions that at least 10% of municipal own revenue income is earmarked for urban poor, it states "It shall also be incumbent on the Corporation to make, in its budget for every official year, provision for making expenditure to the extent of such amount, not exceeding ten percent of its income for such year........ for the purpose of providing basic facilities, like water supply, drainage, sanitation, ..., slum clearance and such other matters in areas predominantly populated by members of Scheduled Castes, Scheduled Tribes and other socially and economically backward class of people". Other ULBs of Gujarat have also adopted similar approach.

Source: PAS (2014) Slum Free Action Plan. PAS; Bhatkal T, (2015) One step forward, one step back? Ideas for India. Available at: https://shorturl.at/jqDI1 ; CWAS (2020) Reaching the unserved: Access to individual toilets in vulnerable urban areas. Available at: https://shorturl.at/uFGQT

3.3 Need for Centralized database systems

Cities need to have a digital database of properties. This database should also have details of the basic services available on these properties. In some cities, such data is only at zonal or ward level, and a city level aggregation is not readily available. It is important to collate this information at central level in the ULB. Adding and linking the water services database with property tax will also be helpful in in planning for extension of networks. It will also support in billing and collection of water charges along with property taxes. A single window for database will also reduce the burden both on the citizens and the ULB officials. It will reduce the efforts and costs needed to collect and verify documents each time.

Case 9: Innovative artificial intelligence-based digital platform for provision and monitoring of municipal service in Andhra Pradesh

The state government of Andhra Pradesh for moving towards eGovernance has developed a digital platform. This portal is an online, transparent and secured citizen-centric service facility to provide convenient access to the citizens without any need for them to go to multiple Government offices for getting their work done. It works through the central pooling of relevant departmental records and leverages to fullest to provide services to the citizens.

It improved the monitoring and delivery of public services. For example, under the project, new piped water connections were provided to over 200,000 households in 110 municipalities between 2015 and 2019, and new applications for piped water supply were linked to the AI based platform. As a result, processing times for citizens to apply for new public services such as water connections, building permits, etc., reduced significantly and more efficient monitoring of services was possible. An application for registering a shop post 2019 can be completed online and is processed within 15 minutes, when it would have taken many days earlier. Applications for a trade license, permission for a water connection, or transfer of title deeds of property are processed within 15 days (when it used to take months), resulting in time, cost and money saved for millions of citizens. The new systems enabled municipal governments to collect accurate information, which in turn provided two key benefits: **It helped curtail tax evasion-** Revenue from property taxes and water charges more than doubled from 2015 to 2019. **It improved the monitoring and delivery of public services.**

Source: *Department of Administrative Reforms and Public Grievances (2014) Good Governance Practices in Public Administration- Documentation of MeeSeva. Govt. of India. Delhi; Churamani, P., Ojha, S. and Kaiser, K. (2020) Digital Transformation in Andhra Pradesh, India. Chapter 7. Enhancing Government Effectiveness and Transparency. World Bank; https://www.worldbank.org/en/results/2020/12/15/cities-in-india-bet-on-digitization-for-better-services*

In addition, adoption of GIS based spatial mapping will also help in maintaining a spatial database system. An advisory on GIS mapping published by MoHUA can help the ULB to take up an exercise of mapping the water supply and sewerage services and link it with the property database. Simultaneously, adoption of latest technologies such as Internet of Things (IoT) enabled water monitoring and control systems will go a long way in optimizing the available water supply.

4. Affordable connection charges and water tariffs

AMRUT 2.0 guidelines mention "Providing universal piped water supply with household water tap connection through Last mile connectivity to households (Not exceeding ₹ 3,000 per HH) (MoHUA, 2021). Thus, while ULBs are advised to keep the connection charges below the suggested limit of Rs. 3,000, many ULBs charge more as various costs of road cutting charge, plumber fee, extra pipe etc are added. The resultant high charges pose a significant challenge to urban poor households. This section highlights various methods to reduce the connection charges and to ensure that water tariffs are affordable.

4.1 Approaches to reduce connection charges

Most ULBs require applicants to pay an upfront connection fee once the new water connection has been approved. The fees have to be paid in full before the connection is given. While the components of connection fee vary across cities, they usually include connection charges, plumbing charges, road cutting fees, security deposit, etc. Some cities have differential connection charges for slum and non-slum areas.

One approach to alleviate the burden of an upfront payment of the full connection charge, by including them progressively in the water tax or water bills. Thus, instead of a lumpsum payment for the full connection charge, it can be recovered in instalments along with the water tax/charge. The charges can be collected over several months or annually. This will make the charges affordable for the urban poor households.

Case 10: Drink from Tap Mission, Odisha: Simplifying the process of water connection

Government of Odisha launched the 'Drink from Tap' mission in October 2020 with an aim to provide good quality piped drinking water to citizens on a 24*7 basis. One of the objectives of this mission was to achieve 100 percent coverage of households with piped drinking water in adequate quantity and quality as per the recommended standards. To achieve universal coverage of household connections, the state government took various steps. It reduced connection charges and introduced an option of payment on instalments. The citizens were not required to obtain road cutting permission for connection. For the urban poor the administration relaxed norms by a waiver of indemnity bond and connection fees and providing a free house connection with two taps. It covered all the uncovered slums under AMRUT and the State Plan. This helped all the poor households to shift from hand pumps or tube wells to piped water supply by public authorities.

*Source: CPHEEO (2021) Drinking from tap mission in Puri City (A case study of 24*7 water supply project. Ministry of Housing and Urban Affairs (MoHUA), Govt. of India.*
https://mohua.gov.in/pdf/624eb41e1f6e6Drink-from-Tap-Mission-A-case-study-of-24x7-Water-Supply-in-Puri-city.pdf;

Differential charges for slum households can help minimize connection costs for urban poor.

Often for the urban poor, high connection charges become a barrier for them to take an individual water connection. The total connection charges are sometimes equivalent to family's one month or two-month income (Wateraid India, 2018). This is also sometimes the reason for them to resort to alternate water sources or illegally tap water lines. A differential charges approach for slum households will help to minimize the cost of connections for them.

Some states and cities have already adopted such an approach and have reduced connection charges for slum households. The charges can also be linked to the property size to make them more equitable. Sangli-Miraj-Kupwad Corporation has passed a Resolution to give water connection to slum households at only Rs. 100 without any additional charges. Ahmedabad Municipal Corporation also has differential connection charges for slum and non-slum households. The state of Jharkhand has adopted a policy to relax the water charges for below poverty line families (Department of Urban Development and Housing, Govt. of Jharkhand, 2016).

Another way to reduce the connection fee for urban poor is by excluding the additional costs of road cutting and plumbing charges. As mentioned earlier, internal network including the pipeline from main network to the house/plot should be a part of the project costs. These charges should not be borne by the applicants, particularly the urban poor households.

The states or cities can also provide subsidies to the urban poor for getting water tap connections. Under its 'Maharashtra Suvarna Mahotsavi Urban Dalit Settlement Water Supply Scheme', the Government of Maharashtra provides Rs. 4000 as incentive to Dalit households to take water connection (Water Supply and Sanitation Department, Govt. of Maharashtra, 2020). The state Government of Andhra Pradesh released funds under a Slum Development Project to provide a 50 percent subsidy towards the connection costs. In Vijaywada Municipal Corporation area, more than 5000 slum dwellers took water connection under this project (WSP, 2009, pg. 42).

Case 11: Relaxing water connection charges for urban poor at state level, Case of Jharkhand

Jharkhand's water user charge policy for urban areas, 2016 mentions sustainable supply of safe drinking water in urban areas as an urgent priority. While implementation of user charge reforms refers to recovering cost incurred on provision of service, it also mentions about the need for improving the access to individual water connections. Thus, the State Government exempted onetime water connection charges for Below Poverty Line families. However, they still have to pay the consumption charges every month or at a pre-determined time.

Source: Department of Urban Development and Housing, Govt. of Jharkhand (2016) Jharkhand water user charge policy. Govt of Jharkhand.

The examples in Case 11 and 12 show that reducing connection charges, especially for the urban poor, is a viable and appropriate strategy for improving the last mile connectivity. Local governments can use additional revenues generated from new non-slum property connections. The cost savings from closing the water standposts can be diverted to a subsidy fund. Case 11 shows that state government grants can support the cost of subsidized connections for the poor. Government of Gujarat under its state scheme of 'Swarnim Jayanti

Mukhya Mantri Shaheri Vikas Yojana' provided water connection at Rs. 500 for any slum or non-slum households across all the ULBs in Gujarat (see Case 14).

Case 12: Reduced water connection charges for urban poor in Maharashtra

Two municipal corporations in Maharashtra, Sangli-Miraj-Kupwad Municipal Corporation (SMKMC) and Chandrapur Municipal Corporation have taken the approach of reducing connection costs to enable increased coverage of connections, especially for the urban poor.

Sangli-Miraj-Kupwad charges a nominal fee of Rs 100 per connection under the slum rehabilitation programmes by MHADA referred as Valmiki Niwas for the urban poor. Following this, the SMKMC passed a resolution for water connections to slum household mentioning that each connection will be provided to the slum applicant with only a deposit of Rs. 100. Additional required fund was used from 14^{th} finance commission grant, or Ward Development Fund. Nearly 1200 water connections have been given to slum dwellers so far.

Image source: Hindustan Times by Jeet Mashru; Source: Sangli Miraj Kupwad Municipal Corporation (2009) Resolution No. 148, Subject No. 11 of General Body meeting no. 9, dated 21/02/2009. Sangli Miraj Kupwad Municipal Corporation.

Case 13: Indirect collection of water connection charges linked to monthly water bill in Chandrapur Municipal Corporation

Chandrapur Municipal Corporation provides water connection with meters free of cost to all slum and non-slums households under the AMRUT programme. This has increased water connections by ~5000 and improved the coverage in the city to 65%. The cost of water connection is recovered over several months as a part of the water charge. All property owners were encouraged to apply for metered water connection as up-front charges were not required.

Source: Chandrapur data retrieved from Notesheet which Chandrapur Corporation submits to MoHUA for AMRUT monitoring; CWAS (2019-2022) Service Level Benchmark, Maharashtra.

Case 14: Connections charges across cities of Gujarat were kept at Rs. 500 under the Swarnim Jayanti Mukhya Mantri Shehri Vikas Yojana

In Gujarat, under the Swarnim Jayanti Mukhya Mantri Shaheri Vikas Yojana, infrastructure projects related to water supply and underground drainage in the state are being taken up by the Gujarat Urban Development Mission.

In line with the "Har Ghar Jal" campaign under Nal Se Jal, the state Government of Gujarat has made a commitment to provide clean drinking water to all the families in the cities through a tap connection. This scheme was launched for all 170 ULBs of Gujarat.

It was decided to charge an affordable Rs. 500 for a new connection under this scheme. This helped to provide connections to all the household applicants. The charges were same for slum and non-slum households. Taking the benefit of this scheme, the cities have provided individual tap connections to many households, increasing the overall coverage of tap connections.

With this scheme in place, there was an increase of more than 2,40,000 domestic water connections across all the ULBs till March 2022.

Source: GUDM. Swarnim Jayanti Mukhya Mantri Shehri Vikas Yojana. Govt of Gujarat. CWAS (2022) Service Level Benchmark- Performance Assessment Systems data for Gujarat.

Case 15: Subsidized Connections in Andhra Pradesh

In the late 1990s, the residents of Vijayawada (population 1 million) in Andhra Pradesh, India, got their water from about 900 private hand-bored wells and a municipal system serving 36,000 house connections and 6,500 public standposts. Most of the standposts had lost their taps and ran continuously. The state government of Andhra Pradesh released funds under the National Slum Development Project to provide a 50 percent subsidy toward the connection costs. When the Vijayawada Municipal Corporation announced this program, there was an overwhelming response from slum dwellers, and more than 5,000 came forward offering to pay the Rs 2,000 deposit. Using the cash inflow, the municipality was able to extend its distribution pipelines to several unserved areas.

Source: WSP (2009) Improving water supply and sanitation services for the urban poor in India. WSP. New Delhi. India.

Explore the possibility of credit for water connections. It is also possible to explore the option of credit for water connections and sanitation credit can be explored. This approach includes providing small loans to the urban poor. In Trichy, Tamil Nadu, a microfinance institution has given loan to SHGs for water or sanitation improvements (Arney H., 2008). This helped many households to get water connections and to build their own toilets. In Jalna Municipal Council, Maharashtra, sanitation credit was mobilized through urban SHGs with the support of MAVIM (Mahila Arthik Vikas Mahamandal).

Case 16: Mobilizing sanitation credit through urban SHGs, A case of Jalna, Maharashtra

Jalna is a Class A Municipal Council in in Maharashtra. Finance for building individual toilets was one of the challenges that many households were facing. Tuo support them, an option of credit was mobilized by self-help groups from the commercial banks.

Mahila Arthik Vikas Mahamandal (MAVIM) is State Women Development Corporation of Maharashtra. It has gained experience in providing stability and sustainability to the SHG movement in the state. MAVIM has created 315 Community Management Resource Centres (CMRC). CMRC is a unique model of community owned and community managed institutions. The project of mobilizing sanitation credit through its urban CMRC was implemented in Jalna city, Maharashtra. It has already completed disbursal of toilet loans to more than 250 women.

The SHG members from MAVIM's CMRC in the city of Jalna were linked to various banks for sanitation credit. The loans were given and demonstrated that women were able to use these funds to build good quality individual household toilets, often along with bathrooms. The project has successfully demonstrated that with the provision of affordable sanitation credit, households were able to get access to sanitation. The model for sanitation credit is sustainable and can be scaled up to various ULBs through the CMRCs in Maharashtra.

Source: MAVIM and CWAS (2018) Mobilizing sanitation credit through urban SHGs, a case of MAVIM, Maharashtra. CWAS. Available at: *https://cwas.org.in/resources/file_manager/mobilizing_sanitation_credit_through_urban_shgs_-_a_case_of_mavim,_maharashtra_12_dec_18.pdf*

Cities must evaluate their tariff structure to make it more equitable. Often, high water tariff is a barrier for the urban poor. So even if the tap water connection is given, efforts need to be made to keep the water tariff affordable for the urban poor. This may also be done through careful design of cross subsidies in tariff. The aspects of cost recovery of operations of the water supply services, payment ability of urban poor, must be considered and an average tariff can be developed. The tariff can be linked to the volumetric usage of water if the connections are metered. Otherwise, tariffs can be linked to the pipe size, or property size, to make the tariff structure equitable. This pricing can be determined by using the 'Water Tariff Setting

Model which has been developed to guide the ULBs for tariff setting. It can be accessed at: LINK.

Spread awareness and adopt participatory outreach to the poor. Local and state governments have many initiatives which can benefit the urban poor. However, often the poor are not aware of such government policies. Thus, it is important to spread awareness about such incentives and subsidy schemes. Holding rallies, social media posts, drawing and painting competitions, radio talk shows, articles in local newspapers, and information posted on municipal websites are good ways to publicise such projects and schemes, and to build awareness. Programs need to be also taken up to promote constructive behaviour to enhance effective use for services and for making regular payment of bills. A specialized unit can be created within the ULB to communicate with the poor communities and facilitate access to services. Self Help Groups (SHGs) can be involved in these to build trust and confidence of the residents in the public water supply system. Puri Municipal Corporation has involved SHGs named "Jalsathi" to facilitate new connections, identify illegal connections and regularize them. This has helped in achieving universal coverage of tap water connections in the city.

Case 17: Involving Self Help Groups (SHGs) in increasing coverage of individual water connections, Case of Puri

The Puri Municipal Corporation has introduced community led water supply management by involving Self Help Groups (SHGs) referred as "Jalsathi". To increase the coverage, they facilitate new connections, identify illegal connections and help to regularize them. The Jalsathis meet their costs by getting 5% of water supply revenue collected from the consumers, Rs. 100 for new domestic house connections and Rs. 300 for new commercial connections.

*Source: CPHEEO (2021) Drinking from tap mission in Puri City (A case study of 24*7 water supply project. Ministry of Housing and Urban Affairs (MoHUA), Govt. of India. https://mohua.gov.in/pdf/624eb41e1f6e6Drink-from-Tap-Mission-A-case-study-of-24x7-Water-Supply-in-Puri-city.pdf; Photo credit: Madan, N and Brittas, A (2022) Odisha's Puri exemplifies achievement of SDG 6.1. e-gov. Accessed: https://shorturl.at/ltyIQ*

Giving the poor an opportunity to participate in planning and design, will make a difference and ensure that the project design is responsive to their needs. Consultation with beneficiaries and a bottom-up approach help to assure that appropriate and affordable technological solutions are selected.

5. Summary

The goal of water connections within premises is essential for both convenience and for health benefits to accrue to household members. For this, many efforts have been made in cities across India to increase access to water supply infrastructure. With substantial increase in the water supply infrastructure under AMRUT 1.0 and AMRUT 2.0, the emphasis is now on ensuring that universal access to tap water connection are available to all households. The focus of this Advisory is to provide guidance to ULBs to identify measures they can take to move towards this goal. The use of this Advisory can be made by both the ULBs and state governments to develop appropriate plans and policies for ensuring last mile connectivity.

Provision of physical infrastructure will help in increasing the coverage of water supply infrastructure as well as increasing the coverage of connections. The measures suggested in this advisory will also ensuring that urban poor households will get access to this infrastructure through house level water supply connections. Along with the infrastructure improvements, this will also require other measures to ensure awareness and affordability, especially for the urban poor. The legal and cost barriers faced by households to procure individual water connection will need be addressed to reach this goal across all states and cities.

State governments and ULBs can adopt various approaches from the Advisory as per their own context and move towards achieving the milestone of universal coverage of water connections. This will also help the country to achieve Sustainable Development Goal (SDG) 6.1 target, “achieve universal and equitable access to safe and affordable drinking water for all.”

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